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# The association between use of asthma drugs and the prevalence of hypomineralized permanent first molar teeth in 6 to 8-year old Danish children

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## Background

Permanent first molar hypomineralization (PFMH) is a common developmental tooth defect, characterized by an insufficient calcium deposit in the enamel. There is a wide range of lesion types but the more serious ones appear clinically as yellow opacities or lesions with loss of tooth substance. The etiology is sparsely elucidated but asthma drugs have been suspected.

## Aim

The aim of this study was to examine the association between redeemed prescriptions of asthma drugs and the prevalence of PFMH among Danish children.

## Methods

We performed a cross-sectional population-based study in two Danish municipalities. All children at age 6, 7, and 8 years were included (n=891) and we examined the teeth of 745(83.6%) of them. We restricted the analyses to the 647 children with eruption of all four permanent first molars. Data on use of asthma drugs from birth until the time of the dental examination were obtained from a prescription-database.

## Results

A positive association was found between use of both inhaled  $\beta$ 2 agonists and inhaled corticosteroids (asthma drugs) and risk of hypomineralizations. Among 47 children with prescriptions of asthma drugs before the age of three years 6(12.8%), and 9(19.29%) had lesions with loss of tooth substance, and yellow opacities or loss of tooth substance, respectively. The corresponding figures among 264 children with no prescriptions for either inhaled or per oral asthma drugs were 13(4.9%), and 30(11.4%) (Table 1).The prevalence ratios are presented in Table 2.

## Conclusions

Children with prescription of inhaled asthma drugs before the age of three have an increased risk for hypomineralization with macroscopic loss of enamel. It is uncertain whether this was a consequence of the drugs, the asthma or both.

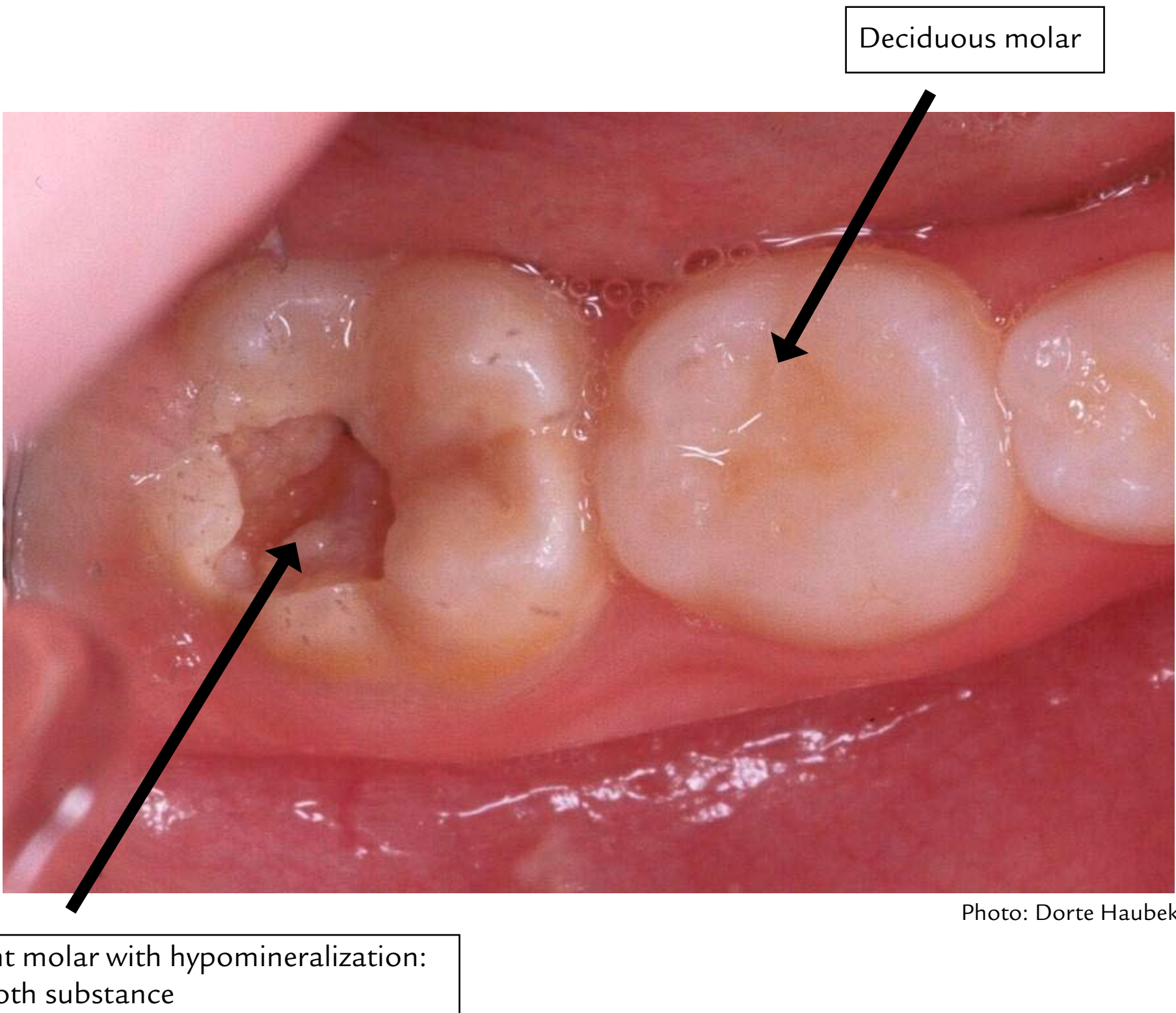


Table 1. Number (and %) of children with prescriptions of asthma drugs, according to gender and the type of hypomineralization.

	Inhaled $\beta$ 2-agonists and corticosteroids		No asthma drug prescriptions
	Anytime (%)	Before 3 <sup>rd</sup> year (%)	Anytime (%)
<i>Number of children</i>			
N	65	47	264
<i>Gender</i>			
Male	36 (55.4)	29 (61.7)	127 (48.1)
Female	29 (44.6)	18 (38.3)	137 (51.9)
<i>Type of hypomineralization</i>			
Lesions with loss of tooth substance	5 (7.7)	6 (12.8)	13 (4.9)
Yellow opacities or lesions with loss of tooth substance	9 (13.9)	9 (19.2)	30 (11.4)

Table 2. Prevalence ratio (with 95% CI) of hypomineralization in molar teeth among children with use of asthma drugs.

	Prevalence ratio with 95% CI		
	All	Boys	Girls
Yellow opacities or lesions with loss of tooth substance	1.69 (0.86-3.32)	1.29 (0.52-3.21)	2.34 (0.86-6.41)
Lesions with loss of tooth substance	2.59 (1.04-6.48)	2.19 (0.42-11.39)	3.38 (1.16-9.87)

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